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### Claims

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1. A length measurement system for measuring relative movements between first and second machine parts (21, 28), said measurement system comprising a sensing head (13) and a rule (1) sensed by it, said sensing head (13) being securely mountable on the first machine part (21) and said rule (1) being connectable with the second machine part (28) during final  
10 assembly of the length measurement system, **characterized in that** the rule (1) is mounted within a profiled part (2) which is securely mountable on the second machine part during final assembly and into which the sensing head (13) protrudes, said sensing head (13) being preadjusted, via a removable mounting element (18, 19), and being releasably connected with said profiled part (2), in a state prepared for final assembly, or said sensing head (13), when  
15 finally assembled, protruding into the profiled part (2) without being supported thereon.

2. The length measurement system as claimed in Claim 1, characterized in that the profiled part (2) comprises an adhesive surface by which it can be adhered to the second machine part (28).

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3. The length measurement system as claimed in any one of the above Claims, characterized in that the profiled part (2) is profiled in a U-shaped manner comprising two legs (8, 9), one of said legs (8) being mounted on the second machine part and carrying, at its interior surface, the rule (1), and the other of said legs (9) embracing the sensing head (13) in a  
25 non-contacting manner during measurement.

4. The length measurement system as claimed in any one of the above Claims, characterized in that, in the state prepared for final assembly, the mounting element (18, 19) connects the two legs of the profiled part (2) with the sensing head (13).

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5. The length measurement system as claimed in Claim 4, characterized in that the mounting element comprises two spacing members (18, 19) of cylindrical cross-section, which are clamped within grooves (16, 17) of the sensing head (13) by means of the profiled part (2).
- 5 6. The length measurement system as claimed in any one of the above Claims, characterized in that the profiled part (2) comprises a reference surface (6, 7) aligning the rule (1), which reference surface (6, 7) is contacted by the rule (1) in its mounted state.
7. The length measurement system as claimed in Claim 6, characterized by a bracing  
10 device (5), which braces the rule (1) in a direction toward the reference surface (6, 7).
8. The length measurement system as claimed in any one of the above Claims, characterized in that, during measurement, the sensing head (13) protruding into the profiled part (2) embraces the rule (1) mounted thereon in a trilateral and non-contacting manner.
- 15 9. A method of final assembly of a length measurement system as claimed in Claim 1, wherein, for final assembly, the profiled part (2) is aligned with and mounted on the second machine part (28), the sensing head (13) is securely mounted on the first machine part (21) in a gap-filling manner (31), and then the mounting element (18, 19) is removed so as to release the  
20 connection between the profiled part and the sensing head.
10. The method as claimed in Claim 9, wherein the profiled part (2) is roughly aligned with a longitudinal axis of the relative movement and is then adjusted, by means of a gauge, along said longitudinal axis, at a constant distance (D) from the first machine part (21), the first and  
25 second machine parts (21, 28) being moved relative to each other so as to adjust the constant distance.
11. The method as claimed in Claim 10, wherein a distance (D) is adjusted using the gauge, said distance (D) resulting in a predetermined gap between the first machine part (21) and the  
30 sensing head (13) prior to mounting the sensing head (13) on the first machine part (28).
12. The method as claimed in any one of Claims 9 to 11, wherein the sensing head (13) and/or the profiled part (2) is/are adhered to the respective machine part (21, 28).